```
XX
KW   Antitoxin; vaccine; neurotoxin; toxin B; intoxication; immunogen;
KW   botulism; BotB.
XX
OS   Clostridium botulinum; serotype B strain Eklund 17B.
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .21
FT                   /note= "N-terminal His tag"
XX
PN   WO9808540-A1.
XX
PD   05-MAR-1998.
XX
PF   28-AUG-1997;   97WO-US015394.
XX
PR   28-AUG-1996;   96US-00704159.
XX
PA   (OPHI-) OPHIDIAN PHARM INC.
XX
PI   Williams JA,  Thalley BS;
XX
DR   WPI; 1998-230234/20.
DR   N-PSDB; AAV30580.
XX
PT   Host cell containing recombinant expression vector encoding Clostridium
PT   botulinum type B or E toxin - useful to treat humans and other animals at
PT   risk of intoxication with clostridial toxin.
XX
PS   Example 35; Page 300-302; 428pp; English.
XX
CC   This is the amino acid sequence of the histidine-tagged C fragment of
CC   Clostridium botulinum (Eklund 17B strain) type B toxin, encoded by a DNA
CC   sequence (see AAV30580) in plasmid pHisBotb. This vector was used to
CC   express soluble C fragment in Escherichia coli host cells, and the
CC   recombinant C fragment was purified on an affinity column. The invention
CC   relates to recombinant proteins derived from C. botulinum toxins. Methods
CC   are provided which allow for the isolation of soluble recombinant
CC   proteins free of significant endotoxin contamination. Preferred hosts for
CC   production of recombinant proteins are E. coli, insect cells and yeast
CC   cells. The recombinant toxins are used as immunogens for the production
CC   of vaccines and antitoxins that are useful in the treatment of humans and
CC   animals at risk of intoxication with clostridial toxin
XX
SQ   Sequence 472 AA;

 AAW68393  Length: 472  August 31, 2004 14:39  Type: P  Check: 5316  ..
Found using 'seq23' (hayes346.key)

...
                                                                  |--|
19     GRHMASMADTILIEMFNKYNSEILNNIILNLRYRDNNLIDLSGYGAKVEVYDGVKLNDKN
                                                                  69 72
                                                                      |--|
79     QFKLTSSADSKIRVTQNQNIIFNSMFLDFSVSFWIRIPKYRNDDIQNYIHNEYTIINCMK
                                                                      131

139    NNSGWKISIRGNRIIWTLIDINGKTKSVFFEYNIREDISEYINRWF
...
                                                                  |--|
189    TNNLDNAKIYINGTLESNMDIKDIGEVIVNGEITFKLDGDVDRTQFIWMKYFSIFNTQLN
                                                                  239
                   |--|                |--|       |--|
249    QSNIKEIYKIQSYSEYLKDFWGNPLMYNKEYYMFNAGNKNSYIKLVKDSSVGEILIRSKY
                   261                 279        290

          |--|
            |--|                                     |--|             |--|
309    NQNSNYINYRNLYIGEKFIIRRESNSQSINDDIVRKEDYIHLDLVLHHEEWRVYAYKYFK
            314                                      347              364
               317
                                 |--|
369    EQEEKLFLSIISDSNEFYKTIEIKEYDEQPSYSCQLLFKKDEESTDDIGLIGIHRFYESG
                                 386
                |--|
            |--|
429    VLRKKYKDYFCISKWYLKEVKRKPYKSNLGCNWQFIPKDEGWTE
            434
               437

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14 matches found in sequence:
 aaw68394 ; Clostridium botulinum toxin B C fragment.
  (from "bt_ags.pep")
  TOIG of: aaw68394  check: 3754  from: 1  to: 472

ID   AAW68394 standard; protein; 472 AA.
XX
AC   AAW68394;
XX
DT   07-DEC-1998  (first entry)
XX
DE   Clostridium botulinum toxin B C fragment.
XX
KW   Antitoxin; vaccine; neurotoxin; toxin B; intoxication; immunogen;
KW   botulism; BotB.
XX
OS   Clostridium botulinum; serotype B Danish strain.
OS   Synthetic.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1. .21
FT                   /note= "N-terminal His tag"
XX
PN   WO9808540-A1.
XX
PD   05-MAR-1998.
XX
PF   28-AUG-1997;   97WO-US015394.
XX
PR   28-AUG-1996;   96US-00704159.
XX
PA   (OPHI-) OPHIDIAN PHARM INC.
XX
PI   Williams JA,  Thalley BS;
XX
DR   WPI; 1998-230234/20.
DR   N-PSDB; AAV30581.
XX
PT   Host cell containing recombinant expression vector encoding Clostridium
PT   botulinum type B or E toxin - useful to treat humans and other animals at
PT   risk of intoxication with clostridial toxin.
XX
PS   Example 35; Page 303-305; 428pp; English.
XX
CC   This is the amino acid sequence of the histidine-tagged C fragment of
CC   Clostridium botulinum (Danish strain) type B toxin, encoded by a DNA
CC   sequence (see AAV30581) in plasmid pETHisb. This vector was used to
CC   express soluble C fragment in Escherichia coli host cells, and the
CC   recombinant C fragment was purified on an affinity column. The invention
CC   relates to recombinant proteins derived from C. botulinum toxins. Methods
CC   are provided which allow for the isolation of soluble recombinant
CC   proteins free of significant endotoxin contamination. Preferred hosts for
CC   production of recombinant proteins are E. coli, insect cells and yeast
CC   cells. The recombinant toxins are used as immunogens for the production
CC   of vaccines and antitoxins that are useful in the treatment of humans and
CC   animals at risk of intoxication with clostridial toxin
XX
```

```
SQ   Sequence 472 AA;

 AAW68394  Length: 472  August 31, 2004 14:39  Type: P  Check: 3754  ..
Found using 'seq23' (hayes346.key)

...
                                                                    |--|
19     GRHMASMADTILIEMFNKYNSEILNNIILNLRYKDNNLIDLSGYGAKVEVYDGVELNDKN
                                                                   69 72
                                                                      |--|
79     QFKLTSSANSKIRVTQNQNIIFNSVFLDFSVSFWIRIPKYKNDGIQNYIHNEYTIINCMK
                                                                       131

139    NNSGWKISIRGNRIIWTLIDINGKTKSVFFEYNIREDISEYINRWF

...
                                                                    |--|
189    TNNLNNAKIYINGKLESNTDIKDIREVIANGEIIFKLDGDIDRTQFIWMKYFSIFNTELS
                                                                     239
                 |--|                     |--|           |--|
249    QSNIEERYKIQSYSEYLKDFWGNPLMYNKEYYMFNAGNKNSYIKLKKDSPVGEILTRSKY
                 261                      279            290
            |--|                              |--|
         |--|                              |--|                |--|
309    NQNSKYINYRDLYIGEKFIIRRKSNSQSINDDIVRKEDYIYLDFFNLNQEWRVYTYKYFK
         314                               347                 364
            317                               349
                      |--|
369    KEEEKLFLAPISDSDEFYNTIQIKEYDEQPTYSCQLLFKKDEESTDEIGLIGIHRFYESG
                      386
            |--|
         |--|
429    IVFEEYKDYFCISKWYLKEVKRKPYNLKLGCNWQFIPKDEGWTE
         434
            437

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12 matches found in sequence:
 aaw68395 ; Clostridium botulinum toxin E C fragment.
  (from "bt_ags.pep")
  TOIG of: aaw68395   check: 1515   from: 1   to: 451

 ID   AAW68395 standard; protein; 451 AA.
 XX
 AC   AAW68395;
 XX
 DT   07-DEC-1998  (first entry)
 XX
 DE   Clostridium botulinum toxin E C fragment.
 XX
 KW   Antitoxin; vaccine; neurotoxin; toxin E; intoxication; immunogen;
 KW   botulism; BotE.
 XX
 OS   Clostridium botulinum; serotype E strain Belgua.
 OS   Synthetic.
 XX
 FH   Key             Location/Qualifiers
 FT   Peptide         1..21
 FT                   /note= "N-terminal His tag"
 XX
 PN   WO9808540-A1.
 XX
 PD   05-MAR-1998.
 XX
 PF   28-AUG-1997;   97WO-US015394.
 XX
```

```
 PR   28-AUG-1996;   96US-00704159.
 XX
 PA   (OPHI-) OPHIDIAN PHARM INC.
 XX
 PI   Williams JA,  Thalley BS;
 XX
 DR   WPI; 1998-230234/20.
 DR   N-PSDB; AAV30584.
 XX
 PT   Host cell containing recombinant expression vector encoding Clostridium
 PT   botulinum type B or E toxin - useful to treat humans and other animals at
 PT   risk of intoxication with clostridial toxin.
 XX
 PS   Example 41; Page 324-325; 428pp; English.
 XX
 CC   This is the amino acid sequence of the histidine-tagged C fragment of
 CC   Clostridium botulinum (Belgua strain) type E neurotoxin, encoded by a DNA
 CC   sequence (see AAV30584) in plasmid pETHisb. This vector is used to
 CC   express BotE soluble C fragment in Escherichia coli host cells, and the
 CC   recombinant C fragment was purified on an affinity column. The invention
 CC   relates to recombinant proteins derived from C. botulinum toxins,
 CC   especially type B and type E toxins. Methods are provided which allow for
 CC   the isolation of soluble recombinant proteins free of significant
 CC   endotoxin contamination. Preferred hosts for production of recombinant
 CC   proteins are E. coli, insect cells and yeast cells. The recombinant
 CC   toxins are used as immunogens for the production of vaccines and
 CC   antitoxins that are useful in the treatment of humans and animals at risk
 CC   of intoxication with clostridial toxin
 XX
 SQ   Sequence 451 AA;

  AAW68395  Length: 451  August 31, 2004 14:39  Type: P  Check: 1515  ..
 Found using 'seq23' (hayes346.key)

 ...
                                                                   |--|    |--
55     MRYKNDKYVDTSGYDSNININGDVYKYPTNKNQFGIYNDKLSEVNISQNDYIIYDNKYKN
                                                                   105     112
       |                            |--|
115    FSISFWVRIPNYDNKIVNVNNEYTIINCMRDNNSGWKVSLNHNEIIWTLQDNSGINQKLA
       115                          137
         |--|
175    FNYGNANGISDYINKWIFVTITNDRLGDSKLYINGNLIDKKSILNLGNIHVSDNILFKIV
         177
            |--|
         |--|   |--|                                          |--|  |--|
235    NCSYTRYIGIRYFNIFDKELDETEIQTLYNNEPNANILKDFWGNYLLYDKEYYLLNVLKP
         238    246                                           279   286
            241
                                   |--|                          |--|
295    NNFINRRTDSTLSINNIRSTILLANRLYSGIKVKIQRVNNSSTNDNLVRKNDQVYINFVA
                                   322                           349

355    SKTHLLPLYADTATTNKEKTIKISSSGNRFNQVVVMNSVGNCTMNFKNNNGNNIGLLGFK
                 |--|
415    ADTVVASTWYYTHMRDNTNSNGFFWNFISEEHGWQEK
                 425

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12 matches found in sequence:
 aaw68396 ; Clostridium botulinum toxin E C fragment.
  (from "bt_ags.pep")
  TOIG of: aaw68396   check: 4403   from: 1   to: 452

 ID   AAW68396 standard; protein; 452 AA.
 XX
 AC   AAW68396;
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